

Final

Supplemental Site Investigation Plan for Operable Unit 6, Site 12

**Marine Corps Air Station
Cherry Point, North Carolina**



Prepared for

**Department of the Navy
Atlantic Division
Naval Facilities Engineering Command
Norfolk, Virginia**

Contract No. N62470-03-D-4401
Task Order-0007

September 2003

Prepared by

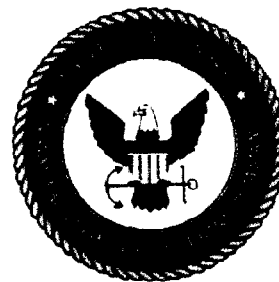
A G V I O
AGVIO ENVIRONMENTAL SERVICES
CH2M HILL
JOINT VENTURE

9/1/03-02664

Final

Supplemental Site Investigation Plan for Operable Unit 6, Site 12

**Marine Corps Air Station
Cherry Point, North Carolina**



Prepared for

**Department of the Navy
Atlantic Division
Naval Facilities Engineering Command
Norfolk, Virginia**

Contract No. N62470-03-D-4401
Task Order-0007

September 2003

Prepared by

A G V I O
ANALYTICAL & CONSULTING SERVICES
CH2M HILL
CONSTRUCTION

SIGNATURE PAGE

Draft

Supplemental Site Investigation Plan for Operable Unit 6,
Site 12

Marine Corps Air Station
Cherry Point, North Carolina

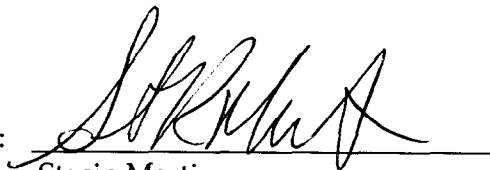
Task Order - 007
Contract Number N62470-03-D-4401

Prepared by

AGVIQ/CH2M HILL Joint Venture 1

July 2003

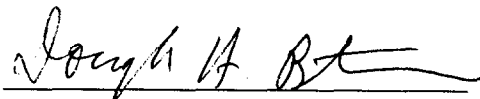
Approved by:



Stacin Martin
Project Manager

Date: September 29, 2003

Approved by:



Douglas H. Bitterman, P.G.
Senior Reviewer

Date: September 29, 2003

Contents

Introduction	1
Site Description.....	2
Site 12 - Crash Crew Training Area	2
Sampling Rationale	4
Soil Sampling.....	4
Groundwater Sampling	4
Field Sampling Protocols, Laboratory Protocols, and Data Management	6
Sampling Equipment Decontamination	6
Utility Clearance	6
Sample Handling	6
Investigation Derived Waste (IDW) Handling.....	6
Surveying	7
Sample Analysis and Data Validation	7
Reporting.....	8
References	9

List of Figures

- Figure 1 1978 Aerial Photograph With Supplemental Sample Locations
Figure 2 Supplemental Sample Locations

Introduction

This memorandum presents the rationale for proposed additional site investigation activities at Operable Unit (OU) 6, Site 12, Marine Corps Air Station (MCAS) Cherry Point, North Carolina. It has been prepared in accordance with the scope of work provided by Naval Facilities Engineering Command (NAVFACENGCOM), Atlantic Division (LANTDIV) as a part of Navy Contract N62470-03-D-4401, AGVIQ/CH2M HILL Joint Venture I (JV I), Task Order - 007.

This additional investigation will be used to provide supplemental data to address regulator concerns regarding the extent of sampling beneath historic burn pit locations during primary Remedial Investigation (RI) activities, the results of which are described in the *Draft Final Remedial Investigation (RI) Report for Operable Unit 6, Site 12, Marine Corps Air Station, Cherry Point, North Carolina*, CH2M HILL, June 2002. The data collected during this supplemental investigation will be used in conjunction with the data presented in the Draft Final RI Report to further evaluate the nature and extent of contamination at OU6, Site 12. Any identified potential risks to human health and the environment, based on the additional data, will be used to supplement the Draft Final RI Report in the development and evaluation of potential site remediation needs.

This memorandum is considered to be an addendum to the earlier RI Work Plan for OU6 (*Draft Work Plan for Operable Unit 6, Crash Crew Training and Engine High-Power Run-Up Areas, Marine Corps Air Station, Cherry Point, North Carolina*, CH2M HILL, January 1999, accepted as Final with approved Response to Comments document attached). Site investigation protocols (SOPs, sample handling, etc.), facility description, and general site related figures and tables are presented in the Work Plan, and will be referenced throughout this technical memorandum. Figures displaying new information related to the proposed supplemental investigation activities that were not provided in the Work Plan are presented herein. Work Plan Figure 2-1 (CH2M HILL, January 1999) presents a regional location map of MCAS Cherry Point and Figure 2-2 (CH2M HILL, January 1999) shows the OU6 site layout.

The specific contents of this memorandum include a site description, sampling rationale (including the proposed technical approach and protocols), and a reporting plan for the supplemental investigation results.

Site Description

Operable Unit 6 consists of the eastern portion of Runway 28, which is located in the northeastern portion of MCAS Cherry Point (Figure 2-1 [CH2M HILL, January 1999]). Based on an inspection of historical aerial photographs, Runway 28 does not appear to have been used as an active runway for aircraft takeoffs and landings since the late 1950s. Since that time, portions of the eastern section of Runway 28 have been used for crash crew training (fire fighting), engine run-up activities, and aircraft long-term storage experimentation.

The runway surface at OU6 is mostly asphalt, with a number of relatively small concrete pads located in the eastern portion of the runway. The runway is bordered by grassy areas to the north, south, and east, with dense woods beyond the grass. The runway represents a topographic high in the immediate area, with the ground surface sloping away gently to the north and east, and more rapidly to the south. Hancock Creek is located approximately 700 feet east of the eastern edge of Runway 28. Access to OU6 is via a gravel road that joins the northeast corner of Runway 28, or by crossing active runways from the west.

Site 12 – Crash Crew Training Area

Site 12 is located along the south side of Runway 28 at approximately the midpoint of the runway's length (Figure 2-2 [CH2M HILL, January 1999]). The area is currently used for the training of the crash crew fire and rescue personnel.

The principal features of Site 12 include:

- **Crash Crew Burn Pit:** The Crash Crew Burn Pit is a circular concrete pad used to burn waste jet fuel (JP-5) to train crash crews to extinguish fires. The concrete burn pit was reportedly constructed in 1985, and is approximately 100 feet in diameter with a 5-inch high curb around the circumference (Halliburton NUS, June 1993). The burn pit itself is drained through subsurface piping to a nearby oil/water separator (discussed in the following bullet item). A circular trench drain surrounds the burn pit approximately 10 feet beyond the concrete curb to capture runoff outside the pad. Runoff in the trench drain is also directed to the oil/water separator. Based on visual inspection and interviews with crash crew personnel, any runoff outside of the trench drain flows southward across the asphalt into the grassy area south of the runway. An east-west trending drainage swale south of the runway eventually receives runoff entering the grassy area. A significant portion of this runoff appears to flow into the grassy area and the drainage swale through a small runoff channel located southwest of the burn pit, immediately east of the oil/water separator. During site visits conducted by CH2M HILL, it was observed that Crash Crew personnel had placed rocks and petroleum-absorbent booms in the runoff channel in an attempt to minimize erosion and capture any petroleum in runoff. Stained soils in this area were also observed during the site visits.

- **Oil/Water Separator:** The oil/water separator is an in-ground, rectangular concrete and steel structure constructed with the top surface at grade. The separator receives firewater contained within the burn pit, runoff captured in the trench drain, and runoff from a concrete pad beneath a waste JP-5 fuel above-ground storage tank. The separator is approximately 5 feet wide, 10 feet long, and 8 feet deep. The oil/water separator was reportedly operated from 1985 to 1990, and during this time period effluent was discharged through a NPDES-permitted outfall to the drainage swale located approximately 50 feet south of the oil/water separator (Halliburton NUS, June 1993). The effluent pipe of the separator has since been welded shut, and facilities maintenance personnel currently pump all liquids from the oil/water separator after training exercises or heavy rainfall and transport them to the Industrial Wastewater Treatment Plant (IWTP).
- **Drainage Swale:** The drainage swale is a broad and shallow earthen depression trending east-west with the lowest elevations of the swale located approximately 75 feet south of Runway 28. In general, flow in the drainage swale is to the west, where it meets a more substantial drainage ditch that flows in the opposite direction approximately 300 feet west of the oil/water separator. At the junction of the two drainages, the flow in this combined drainage ditch is directed immediately to the south and later to the east, eventually discharging into Hancock Creek, which is located approximately 700 feet east of Runway 28. It was observed during site visits that the drainage swale in the vicinity of Site 12 is typically dry from the oil/water separator west to the combined drainage ditch when precipitation is not occurring. However, the drainage swale to the east of the separator was wet and somewhat marshy at the time of the site visit, indicating that the portion of the swale with the lowest surface elevation is located to the east of the separator. There is no outlet for the drainage swale to the east.

Sampling Rationale

The additional investigation activities for Site 12 involve soil and groundwater sampling beneath the former burn pit areas that were not sampled during earlier RI field activities. All field investigation activities will be performed in accordance with the earlier Work Plan for OU6 (CH2M HILL, January 1999) as well as the Master Field Sampling Plan for Marine Corps Air Station Cherry Point, North Carolina (Brown and Root Environmental, Inc., April 1998), except where indicated in this memorandum.

The laboratory analysis methods listed below differ from the earlier Work Plan. General requirements for QC sample collection are listed in Work Plan Table 5-3.

Soil Sampling

Two soil samples will be collected in the approximate center of the two westernmost former burn pits that have been located based on historical aerial photographs (see Figures 1 and 2). Samples were not collected from beneath these former burn pits during earlier investigation activities at Site 12.

Each soil sample will be collected from the upper 6-inch interval just below the bottom of any surface cover material (i.e., concrete/asphalt runway surface). The method of sample collection will be direct push technology (DPT). The soil samples will be obtained by advancing an acetate-lined DPT sampling tool to the desired depth. After the sample is retrieved, the acetate sleeve will be opened and the VOC sample collected from the soil core using an Encore® sampling device. The lithology will then be characterized and the sample material to be analyzed for the remaining parameters will be homogenized in a stainless steel bowl before being placed in the appropriate laboratory-provided sample container(s). It is not anticipated that concrete or surface material coring will be necessary to allow for the collection of soil samples.

The soil samples will be analyzed for volatile organic compounds (VOCs) by EPA Method 8260, semi-volatile organic compounds (SVOCs) by EPA Method 8270, and poly-chlorinated biphenyls (PCBs) by EPA Method 8082.

Groundwater Sampling

Three groundwater samples will be collected at Site 12 in order to supplement earlier investigation results. The samples will be analyzed for VOCs (EPA Method 8260), SVOCs (EPA Method 8270), and PCBs (EPA Method 8082). One sample will be collected in the same location as the former temporary well 012TW01 (see Figures 1 and 2). In addition, two groundwater samples will be collected beneath the approximate center of the two westernmost former burn pits, at the same locations as the soil samples described above (see Figures 1 and 2).

All groundwater samples will be collected from a depth of approximately 10 feet below ground surface, which is the middle of the screened depth interval for former temporary monitoring well 012TW01. DPT methods will be used to perform the groundwater sampling by advancing a stainless steel groundwater sampling tool to the desired depth, followed by thorough purging, collection of groundwater quality parameters, and sample collection from within the DPT groundwater sampling tool using a low-flow sampling technique and disposable sampling equipment. The VOC samples will be collected first using the "straw method".

Field Sampling Protocols, Laboratory Protocols, and Data Management

Standard operating procedures for various field activities are described in the Master Field Sampling Plan for Marine Corps Air Station Cherry Point, North Carolina, Brown and Root Environmental, Inc., April 1998, which is referred to in the following paragraphs as the Master FSP.

Sampling Equipment Decontamination

All equipment involved in field investigation activities will be decontaminated upon arrival to the site, between sampling or borehole locations, and at the conclusion of investigation activities. Details on procedures for decontamination can be found in Section 2.14 of the Master FSP.

Utility Clearance

All proposed subsurface sampling points will be cleared for utilities by a subcontracted utility clearance company.

Sample Handling

Sample handling includes the field-related considerations regarding field sample documentation, nomenclature, packaging, shipping and custody. Sample handling and custody procedures are described in Sections 2.10 and 2.11 respectively, of the Master FSP and Section 4.0 of the Master Quality Assurance Plan for Marine Corps Air Station Cherry Point, North Carolina, Brown and Root Environmental, Inc., April 1998.

Investigation Derived Waste (IDW) Handling

Four types of potentially contaminated residues are expected to be generated during the field work: (1) personal protective equipment (PPE) and acetate liners from the soil cores; (2) fluids from the decontamination of the direct-push equipment and sampling tools and equipment; (3) purge water from the well development and groundwater sampling; and (4) incidental soils remaining from DPT soil cores. PPE, acetate liners, and other disposable material from soil and groundwater sampling will be disposed of as ordinary trash. All fluids from decontamination, well development, and groundwater purging/sampling will be contained and disposed of at the Air Station Industrial Wastewater Treatment Plant (IWTP). Any incidental soil remaining from soil sampling activities will be returned to the borehole from which it was obtained. Further details on procedures for the handling and disposal of these materials can be found in Section 2.15 of the Master FSP.

Surveying

The locations of direct-push soil and groundwater samples collected as part of this field investigation will be surveyed for horizontal control using a geographical positioning system (GPS) unit. Data points will be marked with a wooden stake or pin flag and surveyors tape as samples are collected. Following the sampling, a GPS survey will be conducted to determine the horizontal coordinates of the sample points.

Sample Analysis and Data Validation

AGVIQ/CH2M HILL JV1 will be responsible for tracking samples and obtaining analytical results from the laboratory. The samples will be analyzed by a fixed laboratory with full documentation using EPA-approved SW-846 methods. Analyses will include the proper ratio of field quality control (QC) samples recommended by NFESC guidance for the data quality objectives (DQOs). The analyses performed on all soil and groundwater samples will include TCL VOCs (SW-846 Method 8260), TCL SVOCs (SW-846 Method 8270), and TCL PCBs (SW-846 Method 8082).

All analyses of soil and groundwater samples will be conducted at a subcontracted laboratory that fulfills all requirements of the U.S. Navy's quality assurance/quality control (QA/QC) program manual and USEPA's contract laboratory program (CLP). A signed certificate of analysis will be provided with each laboratory analysis, along with a certificate of compliance certifying that all work was performed in accordance with the applicable federal, state, and local regulations. All analyses will be performed following the highest level of Navy guidance. Normal turnaround times (approximately 28 days) are assumed for all laboratory analyses.

In addition to regular calibration of field equipment and appropriate documentation, QC samples will be collected or generated during environmental sampling activities. These QC samples include field duplicates, trip blanks, equipment rinseate blanks, matrix spike/matrix spike duplicates, and field blanks. The collection of QC samples will be limited to samples collected for laboratory analysis.

All data validation will be performed before the project staff performs an interpretation. The data validation will be performed by an independent subcontractor, and will conform to the highest level of Navy guidance. Data that should be qualified will be flagged appropriately. Results for QA/QC samples will be reviewed and the data will be qualified further, if necessary. Finally, the data set as a whole will be examined for consistency, anomalous results, and reasonableness.

Analytical results for the soil samples, requiring the highest level DQOs, will be validated by a AGVIQ/CH2M HILL JV1 data validation subcontractor approved by the Navy. Data validators will use EPA Region III guidance. The direct-push groundwater samples will not be validated.

Reporting

The results of this investigation will be presented in an appendix to be included as part of the Final Remedial Investigation (RI) Report for Operable Unit 6, Site 12. The appendix will be delivered in draft form for USEPA and NCDENR review. The final appendix, including any changes resulting from comments on the draft version, will be included in the Final RI Report for OU6, Site 12, and will be delivered in final form as part of that report.

References

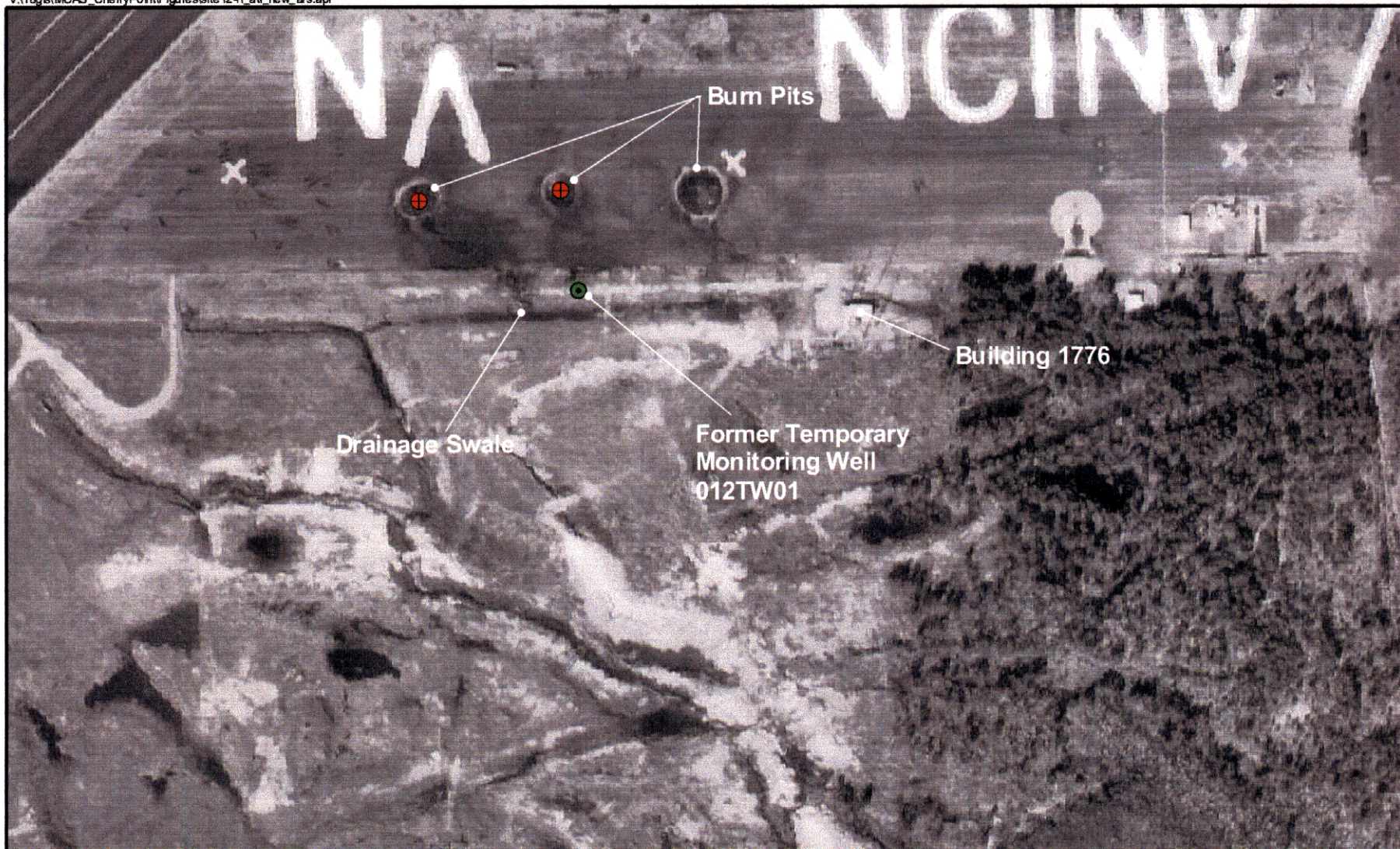
Brown and Root Environmental, Inc., April 1998. Master Field Sampling Plan for Marine Corps Air Station Cherry Point, North Carolina.

Brown and Root Environmental, Inc., April 1998. Master Quality Assurance Plan for Marine Corps Air Station Cherry Point, North Carolina.

CH2M HILL, January 1999. Final Work Plan for Operable Unit 6, Crash Crew Training and Engine High-Power Run-Up Areas, Marine Corps Air Station, Cherry Point, North Carolina.

CH2M HILL, June 2002. Draft Final Remedial Investigation (RI) Report for Operable Unit 6, Site 12, Marine Corps Air Station, Cherry Point, North Carolina.

Haliburton NUS, June 1993. Final RCRA Facilities Investigation, 21 Units, Marine Corps Air Station Cherry Point, North Carolina.



LEGEND

- Soil and Groundwater Sampling Location
- Groundwater Sampling Location





200 0 200 400 Feet

Figure 1
1978 Aerial Photograph With Supplemental Sample Locations
Site 12 Remedial Investigation
MCAS Cherry Point

CH2MHILL



LEGEND

-  Soil and Groundwater Sampling Locations
-  Groundwater Sampling Locations



0 100 200 Feet



Figure 2
Supplemental Sample Locations
Site 12 Remedial Investigation
MCAS Cherry Point

CH2MHILL